

Please amend the above-referenced application as follows:

IN THE CLAIMS

Please cancel claims 2, 3, 12, 13, 19 and 20;

Please amend the claims as follows:

1. (Once Amended) An apparatus for occlusion testing primitives being processed in a graphics system, each primitive having a minimum Z value and a maximum Z value, the apparatus comprising:

logic configured to create a Z pyramid data structure, the Z pyramid data structure comprising at least first and second levels, each level comprising a plurality of regions, each region comprising a plurality of subregions, each subregion corresponding to a single Z value, each region corresponding to a plurality of Z values and having a maximum region Z value corresponding to the greatest of the Z values of the region, wherein each subregion in the second level has a Z value that corresponds to a maximum Z value of a plurality of subregions in the first level, said logic comparing the minimum Z value of each primitive with the Z value of a region associated with the tested primitive to determine whether or not the tested primitive is fully occluded, wherein if a determination is made that the tested primitive is not fully occluded, said logic determines whether or not any subregion of the region associated with the tested primitive is fully covered by the primitive, wherein if said logic determines that a subregion is fully covered by the tested primitive, then said logic determines whether or not the Z value of the covered subregion needs to be replaced with the maximum Z value of the tested primitive, wherein said logic to determines whether the Z value of the covered subregion needs to be replaced with the maximum Z value of the tested primitive by determining whether or not the maximum Z value of the tested primitive is less than the Z value for the covered subregion, wherein if said logic determines that the maximum Z value of the primitive is less than the Z value for the covered subregion, then the Z value for the covered subregion is replaced with the maximum Z value of the primitive.

A2

4. (Once Amended) The apparatus of claim [3] 1, wherein said logic maintains a coverage mask for each level of the Z pyramid data structure, each coverage mask comprising a bit for each subregion of the level of the Z pyramid data structure associated with the coverage mask, wherein when said logic determines that the maximum Z value of the primitive is less than the Z value for the covered subregion, a bit in the coverage mask associated with the covered subregion is set.

A3

11. (Once Amended) A method for occlusion testing primitives in a graphics system, each primitive having a minimum Z value and a maximum Z value, the method comprising the steps of:

generating a Z pyramid data structure, the Z pyramid data structure comprising at least first and second levels, each level comprising a plurality of regions, each region comprising a plurality of subregions, each subregion corresponding to a single Z value, each region corresponding to a plurality of Z values and having a maximum region Z value corresponding to the greatest of the Z values of the region, wherein each subregion in the second level has a Z value that corresponds to a maximum Z value of a plurality of subregions in the first level; [and]

comparing the minimum Z value of each primitive with the Z value of a region associated with the tested primitive to determine whether or not the tested primitive is fully occluded;

if a determination is made that the tested primitive is not fully occluded, determining whether or not any subregion of the region associated with the tested primitive is fully covered by the primitive;

if a determination is made that a subregion is fully covered by the tested primitive, determining whether or not the Z value of the covered subregion needs to be replaced with the maximum Z value of the tested primitive by determining whether or not the maximum Z value of the tested primitive is less than the Z value for the covered subregion; and

if a determination is made that the maximum Z value of the primitive is less than the Z value for the covered subregion, replacing the Z value for the subregion with the maximum Z value of the primitive.

A4

14. (Once Amended) The method of claim [13] 11, further comprising the step of:
 maintaining a coverage mask for each level of the Z pyramid data structure, each coverage mask comprising a bit for each subregion of the level of the Z pyramid data structure associated with the coverage mask, wherein when a determination is made that the maximum Z value of the primitive is less than the Z value for the covered subregion, a bit in the coverage mask associated with the covered subregion is set.

A5

18. (Once Amended) An apparatus for occlusion testing primitives being processed in a graphics system, each primitive having a minimum Z value and a maximum Z value, the apparatus comprising:

means for creating a Z pyramid data structure, the Z pyramid data structure comprising at least first and second levels, each level comprising a plurality of regions, each region comprising a plurality of subregions, each subregion corresponding to a single Z value, each region corresponding to a plurality of Z values and having a maximum region Z value corresponding to the greatest of the Z values of the region, wherein each subregion in the second level has a Z value that corresponds to a maximum Z value of a plurality of subregions in the first level; and

means for comparing the minimum Z value of each primitive with the Z value of a region associated with the tested primitive to determine whether or not the tested primitive is fully occluded, wherein if a determination is made that the tested primitive is not fully occluded, said comparing means determines whether or not any subregion of the region associated with the tested primitive is fully covered by the primitive, wherein if said comparing means determines that a subregion is fully covered by the tested primitive, then said comparing means determines whether or not the Z value of the covered subregion needs to be replaced with the maximum Z value of the tested primitive by determining whether or not the maximum Z value of the tested primitive is less than the Z value for the covered subregion, wherein if said comparing means determines that the maximum Z value of the primitive is less than the Z value for the covered subregion, then said comparing means replaces the Z value for the subregion with the maximum Z value of the primitive.